

WHAT IS CLAIMED IS:

1. A method for reconstructing voice information communicated from a source to a destination, comprising the following steps performed at the destination:

5 receiving a plurality of first voice samples communicated from a source;

receiving a voice parameter communicated from the source, the voice parameter characterizing the first voice samples;

10 determining a loss of a packet communicated from the source; and

generating a plurality of second voice samples using the first voice samples and the voice parameter.

15 2. The method of Claim 1, further comprising:

converting the first and second voice samples into a speech signal; and

presenting the speech signal to a user.

20 3. The method of Claim 1, wherein the voice parameter comprises a pitch period.

4. The method of Claim 1, wherein the voice parameter comprises a pitch period that reflects an autocorrelation calculation performed at the source to determine a pitch of a speech signal.

25 5. The method of Claim 1, wherein the first voice samples comprise a selected one of a G.711 audio format and a linear audio format.

6. The method of Claim 1, wherein the first voice samples and the voice parameter are received in a single packet generated at the source.

5 7. The method of Claim 1, wherein:  
the voice parameter is received in a first packet;  
and

10 the first voice samples are received in a second packet separate from the first packet.

8. The method of Claim 1, wherein generating a plurality of second voice samples uses an attenuation factor that increases with each subsequent packet loss.

15 9. The method of Claim 1, wherein the voice parameter comprises a pitch period, and generating the second voice samples comprises:

determining a silence interval represented by the packet loss;

20 determining a start point in a buffer storing the first voice samples that is one or more integer pitch periods before the beginning of the silence interval; and

copying first voice samples from the buffer beginning at the start point to generate the second voice  
25 samples associated with the silence interval.

10. The method of Claim 1, further comprising the following steps performed before receiving the first voice samples:

- negotiating at least one communication capability
- 5 with the source; and
- reserving suitable bandwidth to conduct a voice session based on the negotiated capability.

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11. A method for reconstructing voice information communicated from a plurality of sources to a destination, the method comprising the following steps performed at the destination:

5       receiving, for each of the sources, a plurality of first voice samples generated at the corresponding source;

10       receiving, for each of the sources, a voice parameter communicated from the corresponding source, each voice parameter characterizing the first voice samples generated at the corresponding source;

15       determining, for each of the sources, whether a loss of a packet communicated from the corresponding source has occurred; and

20       generating, for each of the sources having a packet loss, a plurality of second voice samples using previously received first voice samples and the voice parameter generated at the corresponding source.

25       12. The method of Claim 11, wherein the voice parameter comprises a pitch period.

13. The method of Claim 11, wherein the voice parameter comprises a pitch period that reflects an autocorrelation calculation performed at the corresponding source to determine a pitch of a speech signal.

14. The method of Claim 11, wherein the first voice samples comprise a selected one of a G.711 audio format and a linear audio format.

5 15. The method of Claim 11, wherein the first voice samples and the voice parameter are received in a single packet generated at the corresponding source.

10 16. The method of Claim 11, wherein:  
the voice parameter is received in a first packet;  
and  
the first voice samples are received in a second packet separate from the first packet.

15 17. The method of Claim 11, wherein generating a plurality of second voice samples uses an attenuation factor that increases with each subsequent packet loss.

20 18. The method of Claim 11, wherein the voice parameter comprises a pitch period, and generating the second voice samples comprises:

determining a silence interval represented by the packet loss;

25 determining a start point in a buffer storing the first voice samples that is one or more integer pitch periods before the beginning of the silence interval; and

copying first voice samples from the buffer beginning at the start point to generate the second voice samples associated with the silence interval.

19. The method of Claim 11, further comprising:  
mixing first and second voice samples from more than  
one of the sources to generate a mixed signal;  
converting the mixed signal into a speech signal;  
5 and  
presenting the speech signal to a user.

20. The method of Claim 11, further comprising the  
following steps performed before receiving the first  
10 voice samples:  
negotiating, for each of the sources, at least one  
communication capability; and  
reserving, for each of the sources, suitable  
bandwidth to conduct a voice session with the  
15 corresponding source based on the negotiated capability.

21. An apparatus for reconstructing voice information communicated from a source, the apparatus comprising:

an interface operable to receive a plurality of  
5 first voice samples communicated from a source, the interface further operable to receive a voice parameter communicated from the source, the voice parameter characterizing the first voice samples;

a processor operable to determine a loss of a packet  
10 communicated from the source, the processor further operable to generate a plurality of second voice samples using the first samples and the voice parameter;

a converter operable to convert the first and second voice samples into a speech signal; and

15 a speaker operable to communicate the speech signal to a user.

22. The apparatus of Claim 21, wherein the voice parameter comprises a pitch period.

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23. The apparatus of Claim 21, wherein the voice parameter comprises a pitch period that reflects an autocorrelation calculation performed at the source to determine a pitch of a speech signal.

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24. The apparatus of Claim 21, wherein the first voice samples comprise a selected one of a G.711 audio format and a linear audio format.

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25. The apparatus of Claim 21, wherein the interface is operable to receive the first voice samples and the voice parameter in a single packet generated at the source.

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26. The apparatus of Claim 21, wherein the interface is operable to:

receive the voice parameter in a first packet; and

receive the first voice samples in a second packet

10 separate from the first packet.

27. The apparatus of Claim 21, wherein the processor is operable to generate the second voice samples using an attenuation factor that increases with  
15 each subsequent packet loss.

28. The apparatus of Claim 21, wherein the voice parameter comprises a pitch period, the apparatus further comprising:

20 a memory operable to store the first voice samples; and

wherein the processor determines a silence interval represented by the packet loss and determines a start point in the memory that is one or more integer pitch  
25 periods before the beginning of the silence interval, the processor further operable to copy first voice samples from the memory beginning at the start point to generate the second voice samples associated with the silence interval.

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29. The apparatus of Claim 21, further comprising a converter to receive the voice samples and to generate a speech signal for communication to a speaker for output to a user.

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30. An apparatus for reconstructing voice information communicated from a plurality of sources, the apparatus comprising:

an interface operable to receive, for each of the  
5 sources, a plurality of first voice samples generated at the corresponding source, the interface further operable to receive, for each of the sources, a voice parameter communicated from the corresponding source, each voice parameter characterizing the first voice samples  
10 generated at the corresponding source; and

a processor operable to determine, for each of the sources, whether a loss of a packet communicated from the corresponding source has occurred, the processor further operable to generate, for each of the sources having a  
15 packet loss, a plurality of second voice samples using previously received first voice samples and the voice parameter generated at the corresponding source.

31. The apparatus of Claim 30, wherein the voice  
20 parameter comprises a pitch period.

32. The apparatus of Claim 30, wherein the voice parameter comprises a pitch period that reflects an autocorrelation calculation performed at the  
25 corresponding source to determine a pitch of a speech signal.

33. The apparatus of Claim 30, wherein the first voice samples comprise a selected one of a G.711 audio  
30 format and a linear audio format.

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34. The apparatus of Claim 30, wherein the interface is operable to receive the first voice samples and the voice parameter in a single packet generated at the corresponding source.

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35. The apparatus of Claim 30, wherein the interface is operable to:

receive the voice parameter in a first packet; and  
receive the first voice samples in a second packet  
10 separate from the first packet.

36. The apparatus of Claim 30, wherein the processor is operable to generate the second voice samples using an attenuation factor that increases with  
15 each subsequent packet loss.

37. The apparatus of Claim 30, wherein the voice parameter comprises a pitch period, the apparatus further comprising:

20 a memory operable to store the first voice samples;  
and

wherein the processor determines a silence interval represented by the packet loss and determines a start point in the memory storing the first voice samples that  
25 is one or more integer pitch periods before the beginning of the silence interval, the processor further operable to copy first voice samples from the memory beginning at the start point to generate the second voice samples associated with the silence interval.

38. The apparatus of Claim 30, wherein the processor is further operable to mix the first and second voice samples from more than one of the sources to generate a mixed signal, and further comprising:

5           a converter operable to convert the mixed signal into a speech signal; and

          a speaker operable to communicate the speech signal to a user.

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39. An apparatus for reconstructing voice information communicated from a source to a destination, comprising:

means for receiving a plurality of first voice  
5 samples communicated from a source;

means for receiving a voice parameter communicated from the source, the voice parameter characterizing the first voice samples;

means for determining a loss of a packet  
10 communicated from the source; and

means for generating a plurality of second voice samples using the first voice samples and the voice parameter.

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40. Logic encoded in media for reconstructing voice information communicated from a source to a destination, the logic operable to:

receive a plurality of first voice samples  
5 communicated from a source;

receive a voice parameter communicated from the source, the voice parameter characterizing the first voice samples;

determine a loss of a packet communicated from the  
10 source; and

generate a plurality of second voice samples using the first voice samples and the voice parameter.

41. The logic encoded in media of Claim 40, wherein  
15 the voice parameter comprises a pitch period, and the logic is further operable to:

determine a silence interval represented by the packet loss;

determine a start point in a buffer storing the  
20 first voice samples that is one or more integer pitch periods before the beginning of the silence interval; and

copy first voice samples from the buffer beginning at the start point to generate the second voice samples associated with the silence interval.

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